

**Iowa Department of Natural Resources
Environmental Protection Commission**

ITEM

4

DECISION

**TOPIC Contract – University of Iowa Hygienic Laboratory – Ambient Water
Quality Monitoring and Laboratory Services**

The Department requests Commission approval of a contract in the amount of \$1,078,829 with the University of Iowa Hygienic Laboratory for monitoring and analytical services for stream, wetland, and lake ambient water quality monitoring

This contract encompasses the majority of surface water monitoring conducted as part of the state-wide water monitoring program and is the primary basis for assessing the state's stream water quality. The purpose of the monitoring program is to define the condition of Iowa's water resources, characterize existing and emerging issues by geographic extent and magnitude, measure changes or trends in Iowa's water quality, and provide information to citizens and decisionmakers. To meet these goals, the Department utilizes the University Hygienic Laboratory for field sampling and analytical services. As part of this contract, UHL collects water samples at roughly 80 stream sites throughout the state on a monthly basis and analyzes the water for a variety of parameters including nutrients, bacteria, and water chemistry. Twenty-three of these sites are located upstream and downstream of 10 large cities to measure the influence of urban areas on surface water quality. Some funding for the citizen monitoring program, IOWATER, is also provided through this contract and includes the costs associated with training workshops (Level 1, Level 2, and Level 2 modules), one staff position. The contract contains provisions for special water quality studies that allow the Department to follow-up or verify abnormal results or pursue questions in greater depth or to develop monitoring partnerships with local watershed groups to collect data on watersheds of interest. The contract also covers three GIS (Geographic Information System) staff positions to help the DNR with data management activities such as the development of the Department's One-Stop database, which integrates all the regulatory databases and locating facilities of interest.

Funding for this agreement is available from the State's Environment First Fund appropriated as part of the Iowa Water Quality Initiative.

Mary Skopec, Ph.D., Section Supervisor
Watershed Monitoring and Assessment Section, IGSLQ Bureau
Environmental Services Division

December 11, 2006

IOWA DEPARTMENT OF NATURAL RESOURCES
AGREEMENT NUMBER 07-04HA-01
with the University of Iowa

Agreement Title: Ambient Water Quality Monitoring

Agreement Amount: \$1,078,829

Time of Performance: January 2, 2007 -
June 30, 2007

University Hygienic Laboratory
Project Officer:
Michael D. Wichman

Iowa Department of Natural Resources
Project Officer:
Mary Skopec

Submit original invoice and two copies to: Mary Skopec
Department of Natural Resources
109 Trowbridge Hall
Iowa City, IA 52242-1319

Issue payment to: Mary Jane Beach
Federal Employer ID #4260048130 University of Iowa
Business Office, Jessup Hall
Iowa City, IA 52242

The University Hygienic Laboratory (UHL) agrees to deliver all supplies and perform all services set forth in the attached Special Conditions for the consideration stated herein. The rights and obligations of the parties to this agreement shall be subject to and governed by the Special Conditions and General Conditions. To the extent of any inconsistency between the Special Conditions or the General Conditions and any specifications or other contents which are made a part of this agreement, by reference or otherwise, the Special Conditions and the General Conditions shall control. To the extent of any inconsistency between the Special Conditions and the General Conditions, the Special Conditions shall control. This agreement contains nine articles.

IN WITNESS THEREOF, the parties hereto have executed this agreement on the day and year last specified below.

UNIVERSITY OF IOWA

DEPT. OF NATURAL RESOURCES

By: _____
Twila Fisher Reighley, Assistant VP for Research

By: _____
Jeffrey R. Vonk, Director

Date: _____

Date: _____

University Hygienic Laboratory

By: _____
Dr. Christopher Atchison, Interim Director

Date: _____

This agreement was approved, as required by Subsection 455B.105(7) of the Code of Iowa, by the Environmental Protection Commission on

SPECIAL CONDITIONS

ARTICLE I IDENTIFICATION OF PARTIES

This agreement is entered into by and between the Iowa Department of Natural Resources (hereafter referred to as the Department or DNR) and the University of Iowa (hereafter referred to as UI or UHL).

ARTICLE II STATEMENT OF PURPOSE

This agreement is entered into with the intent of aiding the Department of Natural Resources in determining the quality Iowa's waters by providing field and laboratory services in support of the State's water quality monitoring network.

ARTICLE III STATEMENT OF WORK

3.1 Water Quality Monitoring

a. General Provisions for All Monitoring Projects

Unless otherwise indicated, all requests for approvals, reports, schedules, etc., will be directed by UHL to Mary Skopec, Supervisor of the Watershed Monitoring and Assessment Section, who will serve as the Departmental representative for all references to "the Department" or to "DNR."

b. Quality Assurance

1. All monitoring activities will be conducted in accordance with the Department's Quality Assurance Program Plan and the applicable Work/Quality Assurance Project Plan. For new monitoring activities, Work/Quality Assurance Project Plans will be developed by the Department and reviewed by UHL before the monitoring project begins. When possible, DNR will provide UHL 10 working days for review. Revisions to existing plans will be made as identified by the Department. All Work/Quality Assurance Project Plans will incorporate U.S. EPA approved analytical methods unless otherwise noted in this scope of work.
2. UHL will submit to the Department information that identifies the achievement of Quality Assurance objectives for each monitoring project. Unless otherwise specified in this scope, a report will be submitted to the Department by June 30.
3. UHL will submit information on data quality requirements and assessments (such as detection limit, quantitation limit, estimated accuracy, accuracy protocol, estimated precision, and precision protocol) to the Department for any sample upon request. Information on the analytical reference method, sample preservation and holding time will also be provided if requested.
4. The UHL will provide copies of revised Methods Manuals/Standard Operating Procedure Manuals to the Department upon request. Copies of manuals and procedures are available from the Iowa City laboratory.

5. The Department and UHL will work together to develop a program for the systematic replacement of dated or obsolete equipment. Equipment replacement shall be limited to instrumentation directly related to the activities defined in this agreement, and dependent on the availability of funds.

c. Data Management

1. UHL will transfer water quality data to the Iowa Geological Survey (IGS) via the IGS FTP site. Chemical and physical data will be transferred in a mutually agreeable format for entry into STORET. Biological data will be entered directly into the EDAS database or transferred via email as spreadsheets. Other data will be transferred to the Department via the Office of Management's computer. All data entry will be performed according to the Department's approved Standard Operating Procedure (SOP).
2. All samples submitted to UHL by Department or UHL staff will be coded to a specific monitoring activity and will include a detailed written or photocopied list of the analyses to be performed (unless other arrangements have been made before shipment of the sample to UHL). UHL log-in procedures will accommodate this code. In a format agreed upon by the Department, a monthly report will be provided to the Department from computer printouts of logged-in samples. Any deviation from normal sampling procedures, such as a change in sampling location, omission of samples for analysis, etc., will be identified to DNR in writing prior to transmittal of analytical results.

d. Fixed Monitoring

1. UHL will collect and analyze stream grab samples from 58 fixed locations on a fixed day, if possible, each month as specified in Appendix AWQ1 for parameters listed in Appendix AWQ2. Samples collected as part of this activity will be coded as **01WQFMM**. Sampling site locations, analytical parameters, and sampling frequency may be modified through prior written agreement between the Department and UHL.

UHL will report the data from the fixed monitoring stations to the Department in STORET-compatible format on a monthly basis. The data will include the STORET station

identification number, which will be provided by the Department for all station locations.

UHL will submit completed fixed monitoring results to the Department not later than fifteen (15) calendar days after the end of each month or as soon as possible following completion of all analytical determinations requested. Extra time for analysis is allowed in cases when the analytical work warrants. A notification to the submitter, that analytical results from a sample

will be delayed and the reason for the delay, will be made within fifteen (15) calendar days of receipt of the sample if extra time is required for analysis.

2. UHL will collect and analyze stream grab samples from twenty-three (23) locations upstream and downstream of 10 Iowa cities, on a fixed day monthly as specified in Appendix AWQ3. UHL will analyze these samples for parameters as specified in Appendix AWQ4. UHL will obtain instantaneous flow measurements at the time of sampling. Sampling site locations, analytical parameters, and sampling frequency may be modified through prior written agreement between the Department and UHL. All samples collected as part of this activity will be coded as **08WQCITY**.
3. UHL will collect and analyze lake water column samples from 115 lakes in the state of Iowa as specified in Appendix AWQ5. Samples will be collected three times during the period of April 1 through October 31, weather and lake conditions permitting. UHL will analyze lake water samples for parameters specified in Appendix AWQ6. UHL will also collect bottom sediment samples once during the specified sampling period from the specified 115 lakes. These sediment samples will be analyzed for the parameters specified in Appendix AWQ6. All samples collected as part of lake monitoring activities will be coded as **IGS IOWA LAKES**.

UHL will report the data from the lake water column samples to the Department in STORET-compatible format on an annual basis. The data will include the STORET station identification number, which will be provided by the Department for all station locations.

UHL will submit completed lake monitoring results to the Department by December 31, or as soon as possible following completion of all analytical determinations requested. Extra time for analysis is allowed in cases when the analytical work warrants. A notification to the submitter, that analytical results may be delayed and the reason for the delay, will be made as soon as possible if extra time is required for analysis.

UHL will collect and analyze rainfall runoff event samples from the Hickory Hills Recreation Area in Tama County. UHL will also set up and maintain a network of automated samplers for the purpose of collecting these water samples in a time period encompassing and directly following the runoff event. Samples collected in conjunction with this activity

will be coded as **WQSPEC**. These water samples will be analyzed for orthophosphate as phosphorus, total phosphate as phosphorus, and total suspended solids.

e. Department Sample Collection Activities

1. General Provisions for Samples Submitted by the Department

UHL will analyze all samples submitted by Department staff as described in paragraph 2.

Sample containers for sample transport will be provided by UHL. The results of the tests will be forwarded to the Department office requesting the analyses within fifteen (15) calendar days of receipt. Extra time for analysis is allowed in cases when the analytical work warrants. A notification to the submitter, that analytical results from a sample will be delayed and the reason for the delay, will be made within fifteen (15) calendar days of receipt of the sample if extra time is required for analysis.

2. Special Water Quality Studies

UHL may analyze samples for parameters specified by Department staff. The total cost of these samples shall not exceed \$100,000. These samples will be collected as part of follow-up monitoring to verify results of regular fixed monitoring or to investigate other sources of water contamination not covered elsewhere in this scope of work. Samples collected for this activity will be coded as **WQSPEC**.

The Department will collect water and sediment samples from approximately 55 – 65 wetlands located in the state of Iowa. The Department will submit these samples to the UHL for analysis. Samples collected for this activity will be coded as **DNR WETLANDS**. These water and sediment samples will be analyzed for the parameters specified in Appendix AWQ7.

The Department, in conjunction with IDNR Fisheries, will collect monthly water samples from selected lakes in the state of Iowa. These samples will be submitted to the UHL for analysis. Samples collected for this activity will be coded as **DNR LAKES**. These water samples will be analyzed for the parameters specified in Appendix AWQ8.

f. Reporting Requirements

1. UHL will prepare and submit a monthly status report to Mary Skopec, Supervisor of the Water Monitoring Section, not later than fifteen (15) calendar days after the end of each month for all activities listed under 3.1.e and f of this agreement. The

monthly progress report shall identify all samples submitted by Department staff for each activity code under 3.1.e and f. The report will detail the projects completed including the date, location, the number of stream analyses per project, and parameters analyzed during the reporting period. All analyses efforts will be identified by the name of the stream, date, the parameters analyzed and the number of analyses. UHL will indicate whether UHL or the Department collected the samples and the reason for sample collection as identified by Department staff. The monthly status report will identify reports completed to date, problems encountered in performance of this portion of the scope of work, and needs for further coordination. The status report will project the sampling efforts and report outputs scheduled for completion in the next month.

2. For analytical results that are below the quantitation limit (including pesticides and metals), the quantitation limit of the test will be reported with a “less than” designation. Any results (including fecal coliform, *E. coli* and enterococci tests) run on samples after EPA recommended holding times have been exceeded will be so indicated or qualified as appropriate.

The Water Quality Standard for mercury is 0.05 µg/L. Planning and enforcement of this standard requires analysis at a lower level than that provided for by the EPA approved method. The approved method has a quantitation level of 0.2 µg/L. The Department determined that it needed an improved method for enforcement and planning. EPA has not provided an approved method with a lower quantitation level even though their recommended Water Quality Standard has been below the approved method quantitation level since 1976. The Department and UHL discussed possible options and UHL provided a method modification that provided the necessary quantitation level without significant loss of accuracy or precision. The Department then requested that UHL use this modified method for water quality sampling requiring this lower level of quantitation.

g. Bibliography

Annually, UHL will update the UHL report bibliography to include all reports related to work done on the basis of the Department-UHL Agreement. A copy of the revised bibliography will be submitted to the Department by June 30.

3.2 *Information and Education*

The UHL will provide one full time staff position at the Iowa City Laboratory to work with Department staff. The individual will be responsible for the work with the UHL and the Department in assessing water quality information for the public.

The UHL shall also provide administrative mechanisms to facilitate travel, staff development and training, and the purchase of necessary equipment to meet the goals and needs of the IOWATER program.

The UHL will provide quarterly reports summarizing the activities of the individual during the previous three months including any contacts and assistance provided to volunteer monitoring groups. The reports shall be submitted to Mary Skopec, Supervisor of the Water Monitoring Section not later than fifteen (15) days after the end of the last month of the quarter.

3.3 Geographic Information Support

The UHL will provide two full time staff positions in the Iowa City Laboratory and one full time staff to work with the Des Moines Laboratory to work with Department staff. The individuals will be responsible for the development of Geographic Information System databases and the analytical assessment of GIS databases under the direction of the Department's existing GIS section housed in Iowa City.

The UHL will provide quarterly reports summarizing the activities of these individuals during the previous three months including any travel and related activities. The reports shall be submitted to Chris Ensminger, Supervisor of the Geographic Information Section and Mary Skopec, Supervisor of the Water Monitoring Section not later than fifteen (15) days after the end of the last month of the quarter.

3.5 Leaking Underground Storage Tanks

a. Quality Assurance

1. All monitoring activities will be conducted in accordance with the Department's Quality Assurance Program Plan and the applicable Work/Quality Assurance Project Plan. For new monitoring activities, Work/Quality Assurance Project Plans will be developed by the Department and reviewed by UHL before the monitoring project begins. When possible, ten working days will be allowed for review. Revisions to existing plans will be made as identified by the Department. All Work/Quality Assurance Project Plans will incorporate EPA approved analytical methods unless otherwise noted in this scope of work.
2. UHL will submit information on data quality requirements and assessments (such as the detection limit, quantitation limit, estimated accuracy, accuracy protocol, estimated precision, and precision protocol) to the Department for any sample upon request. Information on the analytical reference method, sample preservation and holding time will also be provided if requested.
3. The UHL will provide copies of revised Methods Manuals/Standard Operating Procedure Manuals to the Department upon request. Copies of manuals and procedures are available from the Iowa City laboratory.

b. Sampling and Reporting Procedures

1. UHL will provide to Fred Hutson, Supervisor of the Underground Storage Tank Section, a written update on the SOP for submitting samples to the laboratory for analysis by January 1. The information shall include: an identification of whether the analysis is performed in Iowa City or Ankeny, the minimum amount of information required with any sample submitted, sample volume and container description, sample preservation requirements, and sample collection to analysis holding times. UHL will also provide forms for recording required sample collection and analysis information.
2. All samples submitted to the UHL laboratory by Department or UHL staff will be coded to a specific monitoring activity and will include a detailed written or photocopied list of analyses. The Department will normally submit a one-quart glass jar and three 40-ml vials when submitting samples for this program. UHL log-in procedures will accommodate this code. Monthly report contents will be obtained from computer printouts of logged-in samples in a format agreed upon by the Department.

c. Sample Analysis

UHL will analyze approximately 150 liquid samples and solid samples collected by Department staff primarily during investigations of petroleum leaks from underground storage tanks. The samples will be analyzed to determine the composition of the contaminant material. Samples collected through this activity will be coded as **WQUST**.

d. Cost

UHL costs for sample analysis for benzene, toluene, ethylbenzene, and xylenes (BTEX), MTBE, TOH, TEH, naphthalene and benzo(a)pyrene will be provided to Fred Hutson, Supervisor of the Underground Storage Tanks Section, by October 31. Cost for each sample will be billed to the Department in a format discussed by the parties and agreed to by the Department after results of the analysis are transmitted to the Department. The total cost for Section 3.3 may not exceed the cost stated in Article IX. By March 1, UHL and DNR will meet and agree upon any adjustments in the number of samples to be submitted and the total cost.

e. Reporting

1. UHL will report the results of the analyses to the sample collector within thirty (30) calendar days of sample receipt, or within a time frame mutually agreeable to both parties at the time of sample receipt.
2. UHL will prepare and submit a monthly status report to Fred Hutson, Supervisor of the Underground Storage Tanks Section, not later than fifteen (15) calendar days after the end of the month. The report will include: The facility name, location and field office, data, type of sample, and number of samples analyzed. Costs will not be billed until after results are transmitted.

3.6 Contaminated Site Monitoring

a. Quality Assurance

1. All monitoring activities will be conducted in accordance with the Department's Quality Assurance Program Plan and the applicable Work/Quality Assurance Project Plan. All Work/Quality Assurance Project Plans will incorporate EPA approved analytical methods unless otherwise noted in this scope of work.
2. UHL will submit information on data quality requirements and assessments (such as the detection limit, quantitation limit, estimated accuracy, accuracy protocol, estimated precision and precision protocol) to the Department for any sample upon request. Information on the analytical reference method, sample preservation and holding time will also be provided if requested.
3. The UHL will provide copies of revised Methods Manuals/Standard Operating Procedure Manuals to the Department upon request. Copies of manuals and procedures are available from the Iowa City laboratory.

b. Sampling and Reporting Procedures

1. UHL will provide to Cal Lundberg, Supervisor of the Contaminated Sites Section, with a written update on the SOP for submitting samples to the laboratory for analysis by January 1. The information shall include: An identification of whether the analysis is performed in Iowa City or Ankeny, the minimum amount of information required with any sample submitted, sample volume and container description, sample preservation requirements, and sample collection to analysis holding times. UHL will also provide forms for recording required sample collection and analysis information.
2. All samples submitted to the UHL laboratory by Department or UHL staff will be coded to a specific monitoring activity. UHL log-in procedures will accommodate this code. Monthly report contents will be obtained from computer printouts of logged-in samples in a format discussed by the parties and agreed to by the Department.

c. Sample Analysis

UHL will analyze samples of water, soils, soil-gas, solvents and solid wastes collected by the Department during contaminated sites investigations. The samples will be tested for parameters as specified by the collector which will generally fall within the parameters listed in Appendices USM1 to USM6. Samples submitted for analysis will be coded **WMSF**.

d. Cost

A list of possible analytes is provided to UHL in Appendices USM1 to USM6. UHL costs for sample analysis for these analytes will be provided to Cal Lundberg, Supervisor of the Contaminated Sites Section, by October 31. Cost for each sample analyzed will be billed to the Department in a format discussed and agreed to by the Department after results of the analysis are transmitted to the Department. The total cost for Section 3.4 may not exceed the cost stated in Article IX. By March 1, UHL and DNR will meet and agree upon any adjustment in the projected number of samples to be submitted and the cost per sample.

e. Reporting

1. UHL will report the results of the analyses to the sample collector within thirty (30) calendar days of sample receipt, or within a time frame mutually agreeable to both parties at the time of sample receipt.
2. UHL will report compounds which are detected by the method employed but for which analyses were not requested. Such compounds will be reported separately from the requested analytical results and will include compound identification and quantification to the degree feasible without additional analytical work.
3. UHL will prepare and submit a monthly status report to Cal Lundberg, Supervisor of the Contaminated Sites Section, not later than fifteen (15) calendar days after the end of the month. The report will include: The facility name, location and field office, date, type of sample, number of samples analyzed and the cost per sample, and the number of days between sample receipt and submittal of results. Costs will not be billed until after results are transmitted.

APPENDIX AWQ1 MONTHLY MONITORING STATIONS

Stream Name	Ambient Monitoring Station Locations	River Basin ¹	STORET #	Old STORET #
E. Fork Des Moines River	County Rd. B63 bridge north of St. Joseph	DSM	10550001	443015
West Fork Des Moines River	County Rd. two miles south of Humboldt	DSM	10460001	444061
Boone River	County Rd. R27 bridge, 6.5 mi NE of Stratford	DSM	10400001	438056
North Raccoon River	County Rd. D46 bridge, Section 13/24, south of Sac City	DSM	10810001	423014
Beaver Creek	NW 70 th Avenue bridge, two miles east of Grimes	DSM	10770001	420307
South Raccoon River	Bridge 0.75 mi SE of Redfield	DSM	10250001	429340
North River	County Rd. R57 bridge, SE of Norwalk at USGS gage.	DSM	10910002	426058
Middle River	USGS gage 1.5 mi west of Highway 65-69, near Indianola	DSM	10910001	200551
South River	State Highway 92 bridge near Ackworth	DSM	10910003	426046
Whitebreast Creek	Three mi SW of Knoxville	DSM	10630001	100818
Cedar Creek	State Highway 156 (County Rd. G71) bridge, 1.5 mi NW of Bussey	DSM	10630002	500680
Yellow River	County Rd X36 bridge three miles south of Highway 76	NE	10030002	821011
Volga River	County Rd. X3C bridge north of Elkport	NE	10220002	250444
Wapsipinicon River	County Rd. bridge 0.5 mi west of County Rd. D16, north of Independence (Otterville Access)	NE	10100001	443704
No. Fork Maquoketa River	County Rd. north of Maquoketa, SE of Hurstville	NE	10490001	290120
Upper Iowa River	Highway 76 bridge three mi south of Dorchester	NE	10030001	821130
Maquoketa River	Highway 61 bridge NW of Maquoketa	NE	10490002	290220
Wapsipinicon River	Highway 956 bridge three mi south of DeWitt	NE	10820001	443023
Turkey River	County Rd. C43 (Jupiter Rd.) south of Garber at USGS gage	NE	10220001	-----
Bloody Run Creek	Highway 18 bridge, 0.5 mi west of Marquette	NE	10220003	-----
Big Spring	Big Spring Fish Hatchery	NE	30220001	-----
Indian Creek	Gravel Rd. bridge 1.8 mi east of Green Castle, 4.8 mi north of Colfax	SK	10500001	700102
South Skunk River	Highway 63 bridge north of Oskaloosa	SK	10620001	821035
Cedar Creek	Gravel road bridge three mi SW of Oakland Mills	SK	10440001	821004

North Skunk River	180 th Ave. bridge SW of Sigourney, west of Highway 149	SK	10540001	-----
West Nishnabotna River	Three mi east of Malvern	S	10650001	822310
Chariton River	Highway 5 bridge 2.5 mi north of Centerville	S	10040001	822502

¹ River basin abbreviations: DSM = Des Moines, IC = Iowa Cedar, NE = Northeastern, SK = Skunk, S = Southern, W = Western

APPENDIX AWQ1 MONTHLY MONITORING STATIONS

Stream Name	Ambient Monitoring Station Locations	River Basin ¹	STORET #	Old STORET #
East Nishnabotna River	Highway 59 bridge north of Shenandoah	S	10360001	821008
East Nodaway River	State Highway 2 bridge 2.5 mi east of Clarinda	S	10730002	780809
West Nodaway River	County Rd. J53 bridge near Shambaugh	S	10730001	787044
Thompson Fork- Grand River	U.S. Highway 69 bridge at Davis City	S	10270001	784089
Little Sioux River	Gravel Rd. bridge 1.2 miles west of Milford, 0.5 mi upstream of mouth of Mill Creek	W	10300001	920450
Rock River	County Rd. B40 bridge north of Hawarden	W	10840001	975005
Little Sioux River	County Rd. C16 bridge 5.2 mi east of Larabee	W	10180001	911060
Floyd River	County Rd. C70 bridge three mi north of Sioux City	W	10750001	950110
Little Sioux River	Two mi NE of Smithland	W	10970001	911078
Maple River	At Highway 141-175 bridge 0.25 mi north of Mapleton	W	10670002	911040
West Fork Little Sioux River	Highway 141 bridge 1.0 mi east of Hornick at USGS gage	W	10970002	-----
Soldier River	County Rd. F20 bridge west of Pisgah	W	10430002	950032
Boyer River	County Rd. F58 bridge 2.5 miles NE of Missouri valley	W	10430001	822304
Cedar River	County Rd. bridge four mi SE of Charles City, near Carrville	IC	10340001	325079
Shell Rock River	County Rd. C45 bridge in Shell Rock,	IC	10120001	356062

	below the dam downstream of USGS gage station			
Cedar River	County Rd. north of Janesville 0.25 mi east of Highway 218, upstream of USGS gage	IC	10090001	356061
West Fork Cedar River	County Rd. T71 bridge in Finchford at USGS gage	IC	10070003	325486
Beaver Creek	County Rd. T75 bridge 3.5 mi NW of Cedar Falls	IC	10070001	325860
Black Hawk Creek	Ridgeway Avenue bridge SW of Waterloo	IC	10070004	325109
Iowa River	County Rd. D53 bridge 1.8 mi NE of Gifford	IC	10420001	350150
Wolf Creek	At Main St. bridge in La Porte City	IC	10070002	324908
Cedar River	County Rd. F28 bridge at Cedar Bluff	IC	10160001	323057
English River	County Rd. W61 bridge south of Riverside	IC	10920001	784016
Cedar River	County Rd. G28 bridge NE of Conesville	IC	10700001	323015
Iowa River	Highway 92 bridge at Columbus Junction	IC	10580001	320540
Old Man's Creek	County Rd. W62 bridge 5.0 mi SW of Iowa City	IC	10520001	-----

¹ River basin abbreviations: DSM = Des Moines, IC = Iowa Cedar, NE = Northeastern, SK = Skunk, S = Southern, W = Western

Appendix AWQ2 Monthly Monitoring Parameters

All Station Parameters

Collected on a monthly basis, all stations

temperature	dissolved oxygen
pH	specific conductance at 25°C (umho)
ammonia nitrogen	nitrate + nitrite nitrogen
total Kjeldahl nitrogen	carbonaceous biochemical oxygen demand (5-day)
total suspended solids	flow
turbidity	dissolved orthophosphate (as P)
total phosphate (as P)	hardness as CaCO ₃
total dissolved solids	silica
chlorophyll	
<i>Escherichia coli</i>	
total organic carbon	

Appendix AWQ3 – City Monitoring Stations

City ¹	Stream Name	Monitoring Station Location	STORET #	Old STORET #
Spencer US1	Little Sioux River	Highway 18 bridge NW of Spencer	10210002	-----
Spencer US2	Ocheyedan River	County Rd. M38 bridge SW of Spencer	10210001	924003
Spencer DS1	Little Sioux River	County Rd. M50 bridge east of Spencer	10210003	-----
Ames US1	South Skunk River	Sleepy Hollow Canoe Access, gravel road bridge east of Highway 69 north Ames	10850003	-----
Ames DS1	South Skunk River	County Rd. E55 bridge near Cambridge	10850002	390566
Des Moines US1	Des Moines River	Bridge at NW 66 th Ave. between Johnston and Saylorville	10770002	-----
Des Moines DS1	Des Moines River	State Highway 316 bridge south of Runnells	10770003	-----
Des Moines US2	Raccoon River	County Rd. R16 bridge at Van Meter (at USGS gage)	10250002	-----
Marshalltown DS1	Iowa River	County Rd. E35 bridge east of Marshalltown	10640002	-----
Marshalltown US1	Iowa River	State Highway 330 bridge NW of Marshalltown	10640003	-----
Fort Dodge US1	Des Moines River	County Rd. D14 bridge NW of Fort Dodge	10940002	-----
Fort Dodge US2	Lizard Creek	US Highway 169 bridge near Fort Dodge	10940001	500990
Fort Dodge DS1	Des Moines River	County Rd. P59 bridge at Kalo	10940003	-----
Mason City US1	Winnebago River	U.S. Highway 65 bridge north of Mason City	10170002	-----
Mason City DS1	Winnebago River	County Rd. S56 bridge near Portland	10170003	-----
Waterloo US1	Cedar River	Below the dam on East Main St. in Cedar Falls	10070005	-----
Waterloo DS1	Cedar River	County Rd. D38 bridge at Gilbertville	10070006	-----
Cedar Rapids DS1	Cedar River	Highway 30 bridge east of Cedar Rapids	10570001	-----
Cedar Rapids US1	Cedar River	County Rd. E36 bridge east of Palo (Blairs Ferry Rd.)	10570002	-----
Iowa City US1	Iowa River	County Rd. W66 bridge (Dubuque St.) north of Iowa City	10520002	-----
Iowa City DS1	Iowa River	County Rd. F62 bridge east of Hills	10520003	-----
Ottumwa DS1	Des Moines River	Gravel Rd. (Cliffland Rd.) bridge near Cliffland SE of Ottumwa	10900002	-----

Ottumwa US1	Des Moines River	County Rd. T67 bridge at Chillicothe NW of Ottumwa	10900003	-----
Sac City US1	North Raccoon River	230 th Street bridge NW of Sac City	10810002	-----

¹ Abbreviations: US = Upstream; DS = Downstream

APPENDIX AWQ4 - CITY MONITORING PARAMETERS

Standard Parameters

Collected on a monthly basis, all city sites

temperature	dissolved oxygen
pH	specific conductance at 25°C (umho)
ammonia nitrogen	nitrate + nitrite nitrogen
total Kjeldahl nitrogen	carbonaceous biochemical oxygen demand (5-day)
total suspended solids	flow
turbidity	dissolved orthophosphate (as P)
total phosphate (as P)	hardness as CaCO ₃
total dissolved solids	silica
chlorophyll	total organic carbon
<i>Escherichia coli</i>	

APPENDIX AWQ5 LAKE MONITORING SITES

City	Stream Name	Monitoring Location	STORET #
Greenfield	Greenfield Lake	Max Depth UTM: 15T 375979, 4572919	22010001
Orient	Lake Orient	Max Depth UTM: 15T 379573, 4561558	22010002
Rosserdale	Meadow Lake	Max Depth UTM: 15T 379809, 4582727	22010003
Bridgewater	Mormon Trail Lake	Max Depth UTM: 15T 362940, 4567001	22010004
Quincy	Lake Icaria	Max Depth UTM: 15T 352763, 4545553	22020001
Rathbun	Rathbun Lake	Max Depth UTM: 15T 508937, 4519333	22040001
Blairstown	Hannen Lake	Max Depth UTM: 15T 573634, 4635018	22060001
Vinton	Rodgers Lake	Max Depth UTM: 15T 576318, 4672559	22060002
Waterloo	George Wyth Lake	Max Depth UTM: 15T 549618, 4709278	22070001
Waterloo	Green Belt Lake	Max Depth UTM: 15T 550237, 4703126	22070002
Waterloo	Meyers Lake	Max Depth UTM: 15T 558410, 4701292	22070003
Waterloo	Mitchell Lake	Max Depth UTM: 15T 556380, 4702992	22070004
Waterloo	South Prairie Lake	Max Depth UTM: 15T 544372, 4702973	22070005
Ogden	Don Williams Lake	Max Depth UTM: 15T 415706, 4662659	22080004
Waverly	Avenue of the Saints Lake	Max Depth UTM: 15T 537961, 4728720	22090001
Rockwell City	North Twin Lake	Max Depth UTM: 15T 365350, 4704019	22130001
Carroll	Swan Lake (Carroll County)	Max Depth UTM: 15T 347642, 4655305	22140001
Lewis	Cold Springs Lake	Max Depth UTM: 15T 325212, 4573260	22150001
Clear Lake	Clear Lake	Max Depth UTM: 15T 466083, 4774865	22170001
Osceola	East Lake Osceola	Max Depth UTM: 15T 437578, 4542641	22200001
Osceola	West Lake Osceola	Max Depth UTM: 15T 432315, 4543511	22200002
Dow City	Nelson Lake	Max Depth UTM: 15T 285393, 4646002	22240001
Denison	Yellow Smoke Lake	Max Depth UTM: 15T 307528, 4654905	22240002
Dexter	Beaver Lake	Max Depth UTM: 15T 398855,	22250001

		4598577	
Drakesville	Lake Wapello	Max Depth UTM: 15T 535946, 4518832	22260001
Leon	Little River Lake	Max Depth UTM: 15T 434236, 4511339	22270001
Pleasanton	Nine Eagles Lake	Max Depth UTM: 15T 434654, 4494280	22270002
Lamoni	Slipbluff Lake	Max Depth UTM: 15T 427894, 4500673	22270003
Danville	Lake Geode	Max Depth UTM: 15T 636027, 4519104	22290001
Okoboji	East Okoboji Lake	Max Depth UTM: 15T 328696, 4805531	22300008
Okoboji	West Okoboji Lake	Max Depth UTM: 15T 325912, 4804680	22300009
Spirit Lake	Center Lake	Max Depth UTM: 15T 326842, 4808839	22300010
Okoboji	Lake Minnewashta	Max Depth UTM: 15T 327944, 4803061	22300011
Maywood	Lower Gar Lake	Max Depth UTM: 15T 328116, 4802411	22300012
Arnold's Park	Upper Gar Lake	Max Depth UTM: 15T 328228, 4804015	22300013
Spirit Lake	Big Spirit Lake	Max Depth UTM: 15T 331520, 4816313	22300014
Wallingford	Ingham Lake	Max Depth UTM: 15T 362139, 4797517	22320001
Dolliver	Tuttle Lake	Max Depth UTM: 15T 369301, 4816565	22320002
Fayette	Volga Lake	Max Depth UTM: 15T 600391, 4750049	22330001
Hampton	Beeds Lake	Max Depth UTM: 15T 480557, 4735282	22350001
Jefferson	Spring Lake	Max Depth UTM: 15T 393380, 4657801	22370001
Yale	Springbrook Lake	Max Depth UTM: 15T 378113, 4625954	22390001
Webster City	Briggs Woods Lake	Max Depth UTM: 15T 434365, 4698124	22400004
Goodell	Eldred Sherwood Lake	Max Depth UTM: 15T 453924, 4754462	22410002
Eldora	Lower Pine Lake	Max Depth UTM: 15T 493597, 4690480	22420001
Eldora	Upper Pine Lake	Max Depth UTM: 15T 494530, 4691272	22420002
California Junction	DeSoto Bend Lake	Max Depth UTM: 15T, 249885, 4602833	22430001
Woodbine	Willow Lake	Max Depth UTM: 15T 268183, 4627929	22430002

Riceville	Lake Hendricks	Max Depth UTM: 15T 536606, 4802088	22450001
Battle Creek	Crawford Creek Lake	Max Depth UTM: 15T 285029, 4683691	22470001
APPENDIX AWQ5 LAKE MONITORING SITES cont.			
City	Stream Name	Monitoring Location	STORET #
Ida Grove	Moorehead Lake	Max Depth UTM: 15T 295738, 4692454	22470002
Glenda Bluff	Lake Iowa	Max Depth UTM: 15T 568838, 4609565	22480001
Kellogg	Rock Creek Lake	Max Depth UTM: 15T 512074, 4620871	22500001
Newton	Mariposa Lake	Max Depth UTM: 15T 503094, 4625097	22500002
Solon	Lake Macbride	Max Depth UTM: 15T 618577, 4627859	22520001
Coralville	Coralville Reservoir	Max Depth UTM: 15T 622374, 4620486	22520004
Tiffin	Kent Park Lake	Max Depth UTM: 15T 605607, 4619847	22520005
Center Junction	Central Park Lake	Max Depth UTM: 15T 653995, 4663949	22530001
Sigourney	Lake Belva Deer	Max Depth UTM: 15T 573309, 4581050	22540001
Algona	Smith Lake	Max Depth UTM: 15T 399012, 4775266	22550001
West Point	Poll Miller Park Lake	Max Depth UTM: 15T 632111, 4508035	22560001
Palo	Pleasant Creek Lake	Max Depth UTM: 15T 598333, 4664312	22570001
Chariton	Red Haw Lake	Max Depth UTM: 15T 477130, 4538868	22590002
Larchwood	Lake Pajoha	Max Depth UTM: 14T 704893, 4806433	22600001
Barnes City	Hawthorne Lake	Max Depth UTM: 15T 545182, 4591762	22620001
Oskaloosa	Lake Keomah	Max Depth UTM: 15T 538666, 4571623	22620002
Wright	White Oak Lake	Max Depth UTM: 15T 543870, 4569294	22620003
Pella	Red Rock Reservoir	Max Depth UTM: 15T 501290, 4580136	22630001
Park Hills	Roberts Creek Lake	Max Depth UTM: 15T 495886, 4585560	22630002
Ferguson	Green Castle Lake	Max Depth UTM: 15T 511589, 4641977	22640001
Soldier	Oldham Lake	Max Depth UTM: 15T 269000, 4654430	22670001
Onawa	Blue Lake	Max Depth UTM: 15T 735070,	22670002

		4658458	
Villisca	Viking Lake	Max Depth UTM: 15T 329215, 4538096	22690001
Paullina	Mill Creek Lake	Max Depth UTM: 15T 282215, 4762598	22710001
Calumet	Dog Creek Lake	Max Depth UTM: 15T 296561, 4756678	22710002
Essex	Pierce Creek Lake	Max Depth UTM: 15T 301197, 4522706	22730001
Emmetsburg	Five Island Lake	Max Depth UTM: 15T 364978, 4777896	22740001
Ruthven	Lost Island Lake	Max Depth UTM: 15T 345418, 4782059	22740002
Ayrshire	Silver Lake (Palo Alto County)	Max Depth UTM: 15T, 346497, 4765895	22740003
Des Moines	Easter Lake	Max Depth UTM: 15T 453575, 4599470	22770001
Polk City	Big Creek	Max Depth UTM: 15T 439233, 4627160	22770004
Polk City	Saylorville Reservoir	Max Depth UTM: 15T 443316, 4617544	22770005
Carter Lake	Carter Lake	Max Depth UTM: 15T 256764, 4574955	22780001
Neola	Arrowhead Lake (Pottawatomie)	Max Depth UTM: 15T 283371, 4590387	22780002
Council Bluffs	Lake Manawa	Max Depth UTM: 15T 260407, 4565455	22780003
Grinnell	Arbor Lake	Max Depth UTM: 15T 522226, 4620031	22790004
Montezuma	Diamond Lake	Max Depth UTM: 15T 537006, 4603763	22790005
Diagonal	Fogle Lake	Max Depth UTM: 15T 386075, 4519009	22800001
Lake View	Arrowhead Lake (Sac)	Max Depth UTM: 15T 330917, 4684791	22810001
Lake View	Black Hawk Lake	Max Depth UTM: 15T 332801, 4684717	22810002
Davenport	Lake of the Hills	Max Depth UTM: 15T 693869, 4599242	22820001
Definace	Manteno Lake	Max Depth UTM: 15T 295175, 4636461	22830001
Harlan	Prairie Rose Lake	Max Depth UTM: 15T 314372, 4607909	22830002
Colo	Hickory Grove Lake	Max Depth UTM: 15T 469881, 4648758	22850001
Buckingham	Casey Lake	Max Depth UTM: 15T 556818, 4679425	22860001
Clutier	Otter Creek Lake	Max Depth UTM: 15T 539735, 4654672	22860002

Gladbrook	Union Grove Lake	Max Depth UTM: 15T 523237, 4663716	22860003
Lenox	Wilson Lake	Max Depth UTM: 15T 370016, 4521856	22870002
New Market	Windmill Lake	Max Depth UTM: 15T 345713, 4510506	22870003
APPENDIX AWQ5 LAKE MONITORING SITES cont.			
City	Stream Name	Monitoring Location	STORET #
Creston	Green Valley Lake	Max Depth UTM: 15T 383816, 4550488	22880001
Thayer	Thayer Lake	Max Depth UTM: 15T 410403, 4541704	22880002
Afton	Three Mile Lake	Max Depth UTM: 15T 398095, 4547390	22880003
Farmington	Indian Lake	Max Depth UTM: 15T 605670, 4498241	22890001
Keosauqua	Lacey Keosauqua Lake	Max Depth UTM: 15T 587001, 4507212	22890004
Keosauqua	Lake Sugema	Max Depth UTM: 15T 585556, 4504092	22890005
Ottumwa	Ottumwa Reservoir	Max Depth UTM: 15T 548264, 4539653	22900001
Milo	Hooper Pond Lake	Max Depth UTM: 15T 450572, 4569746	22910001
Milo	Lake Ahquabi	Max Depth UTM: 15T 450056, 4571501	22910002
Allerton	Bob White Lake	Max Depth UTM: 15T 466158, 4507608	22930001
Badger	Badger Lake	Max Depth UTM: 15T 402156, 4715564	22940001
Lehigh	Brushy Creek Lake	Max Depth UTM: 15T 419282, 4693457	22940002
Calmar	Lake Meyer	Max Depth UTM: 15T 588328, 4780866	22960004
Salix	Browns Lake	Max Depth UTM: 15T 720294, 4687473	22970001
Anthon	Little Sioux Park Lake	Max Depth UTM: 15T 269537, 4703182	22970002
Bristol	Silver Lake (Worth County)	Max Depth UTM: 15T 465945, 4814024	22980001
Cornelia	Lake Cornelia	Max Depth UTM: 15T 443600, 4737793	22990001
Spirit Lake	Little Spirit Lake	Max Depth UTM: 15T 328239, 4819878	270630001

APPENDIX AWQ6 LAKE MONITORING PARAMETERS

Standard Parameters - Water

Ammonia Nitrogen as N	Total Alkalinity	Total Dissolved Solids (field)
Nitrite + Nitrate Nitrogen as N		Silica as SiO ₂ Specific Conductance (field)
Total Kjeldahl Nitrogen	Total Organic Carbon	Turbidity (field)
Un-ionized Ammonia	Chlorophyll a	Depth (total)
Orthophosphate as P	Phytoplankton	Depth (thermocline)
Total Phosphate as P	Zooplankton	Depth (Secchi disk)
Total Fixed Suspended Solids	Temperature (field)	Metals (once per site during sampling season)
Total Volatile Suspended Solids		pH (field)
Ag, Cd, Sb, Tl, Pb, Hg)		(Be, Cr, Ni, Cu, Zn, As, Se,
Total Suspended Solids	Dissolved Oxygen (field)	

APPENDIX AWQ7 WETLAND MONITORING PARAMETERS

Standard Parameters – Water

Ammonia Nitrogen as N	Total Dissolved Solids	Metals (once per site during sampling season)
Nitrite + Nitrate Nitrogen as N	Chloride	(Be, Cr, Ni, Cu, Zn, As, Se, Ag, Cd, Sb, Tl, Pb, Hg)
Total Kjeldahl Nitrogen	Total Organic Carbon	
Un-ionized Ammonia	Chlorophyll a	
Orthophosphate as P	Phytoplankton	
Total Phosphate as P	Zooplankton	
Total Fixed Suspended Solids	Total Alkalinity	
Total Volatile Suspended Solids		
Total Suspended Solids		

Common Nitrogen or Phosphorus Containing Pesticides - Water

Collected on a monthly basis, all stations

acetochlor	alachlor	ametryn
atrazine	butylate	cyanazine
des-ethyl Atrazine	des-isopropyl Atrazine	dimethenamid
metolachlor	metribuzin	prometon
simazine	propachlor	propazine
trifluralin	EPTC	

Nitrogen or Phosphorus Containing Pesticides - Extended List - Water

Bromocil	Fonofos	Dichlorvos
Butachlor	Chlorpyrifos	Disulfoton
Carbaryl	Ethoprop	Diazinon
Clomazone	Phorate	Isophenfos
Pendimethalin	Carbofuran	Methyl parathion
Triallate	Malathion	Parathion
Terbufos	Dimethoate	

Chlorinated Hydrocarbon Insecticides - Water

Aldrin	alpha-BHC	beta-BHC
delta-BHC	Lindane (gamma-BHC)	DDD
DDE	DDT	Methoxychlor
Dieldrin	Endosulfan I	Endosulfan II
Endosulfan sulfate	Endrin	Endrin aldehyde
Endrin ketone	Heptachlor	Heptachlor epoxide
Chlordane	Toxaphene	

PCBs - Water

Aroclor 1016	Aroclor 1221	Aroclor 1232
Aroclor 1242	Aroclor 1248	Aroclor 1254
Aroclor 1260		

Acid Herbicides - Water

2,4,5-TP (Silvex)	bentazon (Basagran)	picloram (Tordon)
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2,4-D	dicamba (Banvel)	chloramben
2,4,5-T	2,4-DB	Acifluorfen
Bromoxynil	Chlorthal-dimethyl	Dichlorprop
Dinoseb	Pentachlorophenol	Triclopyr

Chloroacetanilide Herbicide Degradates - Water

Acetochlor	Acetochlor Oxanilic Acid	Acetochlor Ethane Sulfonic Acid
Alachlor Alachlor	Oxanilic Acid	Alachlor Ethane Sulfonic Acid
Metolachlor	Metolachlor Oxanilic Acid	Metolachlor Ethane Sulfonic Acid

APPENDIX AWQ7 WETLAND MONITORING PARAMETERS cont.

Sulfonyl Urea and Imidazolinone Herbicides - Water

Imazapic	Chlorimuron ethyl	Primisulfuron
methylTriasulfuron		
Imazamox	Chlorsulfuron	Prosulfuron
Flumetsulam (a sulfonamide)	Imazapyr	Halosulfuron-
methylRimsulfuron		
Imazaquin	Metsulfuron methyl	Sulfometuron methyl
Imazethapyr	Nicosulfuron	Thifensulfuron methyl

Common Nitrogen or Phosphorus Containing Pesticides - Sediment

Collected on a monthly basis, all stations

acetochlor	alachlor	ametryn
atrazine	butylate	cyanazine
des-ethyl Atrazine	des-isopropyl Atrazine	dimethenamid
metolachlor	metribuzin	prometon
simazine	propachlor	propazine
trifluralin	EPTC	

Nitrogen or Phosphorus Containing Pesticides - Extended List - Sediment

Bromocil	Fonofos	Dichlorvos
Butachlor	Chlorpyrifos	Disulfoton
Carbaryl	Ethoprop	Diazinon
Clomazone	Phorate	Isophenfos
Pendimethalin	Carbofuran	Methyl parathion
Triallate	Malathion	Parathion
Terbufos	Dimethoate	

Chlorinated Hydrocarbon Insecticides - Sediment

Aldrin	alpha-BHC	beta-BHC
delta-BHC	Lindane (gamma-BHC)	DDD
DDE	DDT	Methoxychlor
Dieldrin	Endosulfan I	Endosulfan II
Endosulfan sulfate	Endrin	Endrin aldehyde
Endrin ketone	Heptachlor	Heptachlor epoxide

Chlordane

Toxaphene

PCBs - Sediment

Aroclor 1016

Aroclor 1221

Aroclor 1232

Aroclor 1242

Aroclor 1248

Aroclor 1254

Aroclor 1260

Acid Herbicides - Sediment

2,4,5-TP (Silvex)

bentazon (Basagran)

picloram (Tordon)

2,4-D

dicamba (Banvel)

chloramben

2,4,5-T

2,4-DB

Acifluorfen

Bromoxynil

Chlorthal-dimethyl

Dichlorprop

Dinoseb

Pentachlorophenol

Triclopyr

Chloroacetanilide Herbicide Degradates - Sediment

Acetochlor

Acetochlor Oxanilic Acid

Acetochlor Ethane Sulfonic Acid

Alachlor Alachlor

Oxanilic Acid

Alachlor Ethane Sulfonic Acid

Metolachlor

Metolachlor Oxanilic Acid

Metolachlor Ethane Sulfonic

Acid

APPENDIX AWQ8 DNR FISHERIES LAKES MONITORING PARAMETERS

Standard Parameters – Water

Ammonia Nitrogen as N

Nitrite + Nitrate Nitrogen as N

Total Kjeldahl Nitrogen

Orthophosphate as P

Total Phosphate as P

Total Volatile Suspended Solids

Total Suspended Solids

Chlorophyll a

Enzyme-linked Immunoassay for Microcystins

ARTICLE IV REPORTS AND PRODUCTS

	PRODUCT	DATE DUE
4.1	<i>Water Quality Monitoring</i>	
a	Quality Assurance report (Article 3.1(b)2)	April 1
b	Fixed monitoring results (Article 3.1 (d)1)	Sample results received by the 15 th of each month following the month of collection
b	Department sample collection activities (Article 3.1(d)2)	Sample results received by the 15 th of each month following the month of collection
C	Quarterly Report of WQSPEC sampling	Within 15 calendar days after the end of each quarter
	Monthly progress report of activities (Article D3.1 (f)1)	Monthly
e	Bibliography of UHL reports (Article 3.1(g))	June 30
4.2	<i>Information and Education</i>	
	Quarterly report (Article 3.2)	Within 15 calendar days after the end of each quarter
5.2	Geographic Information Support Quarterly report (Article 3.3)	Within 15 calendar days after the end of each quarter

ARTICLE V DESIGNATION OF OFFICIALS

The Director of the Department is the official authorized to execute any changes in terms, conditions, or amounts specified in this agreement. Liz Christiansen, Deputy Director, is designated to negotiate, on behalf of the Department, and subject to the approval of the Director, any changes to this agreement.

The University of Iowa Business Manager is the official authorized to execute any changes in the terms, conditions, or amounts specified in this Agreement on behalf of the University of Iowa subject to the approval of the Director of the University of Iowa Hygienic Laboratory.

ARTICLE VI KEY PERSONNEL

Michael Schueller, John Miller

ARTICLE VII TIME OF PERFORMANCE

The performance of UHL is to commence on January 2, 2007. The performance required herein shall be completed by June 30, 2007, except as provided herein.

ARTICLE VIII CONDITIONS OF PAYMENT

This agreement is entered into on a variable price basis. UHL shall be reimbursed on a product or a production basis for authorized costs incurred up to the maximum stated in Article IX.

Reimbursement for the items in the Variable Payment Agreement Amount column will be made monthly or quarterly as stated in the Statement of Work. An invoice for the actual amount of the analytical or other cost involved for each of these items will be accompanied by copies of the appropriate monthly or quarterly report for the billing period as described in Articles 3.1(f), 3.2.

Partial payment shall be processed only when Article IX of the Special Conditions specifies a per unit fee. In all other cases, the provisions of Article 8.2 of the Special Conditions shall apply.

The Department shall not process payment for items of work or service, which, in the determination of the Department, do not meet the specifications of Article III of the Special Conditions. If the item of work or service is resubmitted by a date agreed to by the Department and UHL through an amendment to this Agreement and is determined by the Director of the Department to be satisfactorily completed according to the specifications of Article III of the Special Conditions, payment shall be processed.

If any item of work or service specified in Article III of the Special Conditions is received more than three working days after the due date specified in Article III, a late

penalty may be assessed. The penalty shall be up to five percent (5%) of the amount specified for the late item. The Department shall have the option of terminating this agreement for cause within the meaning of Section 7.1 of the General Conditions if UHL submits any items of work or service more than ten working days after the due date.

The Director may waive the application of Article 8.5 of the Special Conditions for any or all items of work or service specified in Article III of the Special Conditions.

ARTICLE IX - ESTIMATED AGREEMENT BUDGET

DESCRIPTION	VARIABLE PAYMENT **	ONE-TIME PAYMENTS
Stream Water Quality Monitoring		
Fixed Monitoring - Monthly-Field	\$60,691	
Fixed Monitoring - Monthly - Analytical	\$165,465	
City Monitoring – Monthly Analytical	\$59,860	
Hickory Hills Monitoring		
Analytical	\$5,000	
Field	\$2,800	
Lake Monitoring		
Ambient Lake Monitoring - 115 lakes	\$300,000	
DNR Lake Monitoring – 244 samples	\$36,600	
Wetland Monitoring – Analytical	\$93,000	
Special Studies (WQSPEC)	\$75,000	
Shipping and Handling	\$3,000	
Field Equipment As Needed	\$2,500	
3.2 Information and Education	\$30,000	
3.3 Geographic Information Support	\$75,000	
3.5 Leaking Underground Storage Tanks	\$20,000	
3.6 Contaminated Site Monitoring	\$70,000	
Sub-totals	\$998,916	
Facilities and Administrative Costs@8%	\$79,913	
Column Totals	\$1,078,829	
COMPLETE COSTS		

GENERAL CONDITIONS

"General Conditions shall all be subject to Iowa Code Chapter 28E."

Section 1.0 Entire Agreement

This Contract with all attachments and references constitutes the entire Agreement between the Department* and the Contractor with respect to the subject matter hereof, and the Contractor acknowledges that it is entering into the Contract solely on the basis of the terms and conditions herein contained and not in reliance upon any representative statement, inducement or promise, whether oral or written, not contained herein.

Section 2.0 Amendment

The Department or the Contractor may initiate an amendment to this Contract. Any amendment is effective only if in writing and agreed to by the Department and the Contractor. The amendment shall be effective as of the date it is agreed upon, unless otherwise specified in the amendment.

Section 3.0 Availability of Data

All information and data obtained by the Contractor in connection with the Contract shall be made available to the Department. Such information and data shall become the property of the Department except that which is necessary for any patent or copyright purposes of the Contractor.

Section 4.0 Assumption of Risks and Liabilities

The Contractor shall assume all risks and liabilities in connection with the performance of the Contract and shall be responsible for all claims, demands, actions or causes of action of whatever nature or character arising out of or by reason of the execution or performance of the work provided for herein. The Contractor shall to the full extent permitted by Chapter 669, Code of Iowa (2003) indemnify and hold harmless the Department, its employees, agents or representatives, and the state of Iowa from all claims, demands, actions or causes of action, directly caused by the negligence of the Contractor, and shall be responsible for attorney fees, costs and expenses incurred by the Department, its employees, agents or representatives and the state of Iowa, except to the extent caused by the state of Iowa.

*Iowa Department of Natural Resources

Section 5.0 Transfer of Work

The Contractor shall not transfer or assign any part or portion of the work on the Contract, other than specified in the scope of work and/or budget documents (Special Conditions) without the prior written consent of the Department.

Section 6.0 Review of Work

The Department shall have the right to review and observe, at any time, completed work or work in progress on the Contract.

Section 7.0 Publications

- 7.1 All of the Contractor's reports and publications pertaining to work performed under this Contract shall contain the following statement on the credit sheet:

"This project was supported, in part, by the Iowa Department of Natural Resources, through Grant No. 07-04HA-01. However, any opinions, findings, conclusions or recommendations expressed herein are those of the author(s) and do not necessarily reflect the views of IDNR."

- 7.2 The Department reserves the right to publish the reports once completed by the Contractor and delivered to the Department. Written and oral releases are considered to be within the context of publication rights so reserved by the Department. The Contractor shall not publish interim reports without prior written consent of the Department.
- 7.3 Nothing in this section shall be construed to limit the rights of the Contractor to publish data or information in scholarly or professional journals as long as any copyright to be obtained is not prejudiced thereby. There shall be no pre-release of data or findings connected with this Contract in scholarly or professional journals or through public presentations or news media until the Contract is completed, unless prior written approval for such release has been given by the Department. Contract completion is defined herein as termination of the Contract.
- 7.4 All reports, interim and final, published by either the Contractor or the Department, will give credit to the other party's participation in the Contract.
- 7.5 Neither the Department nor the Contractor shall use the name of the other for advertising, promotional, or publicity purposes without the prior written consent of the other.

Section 8.0 Accounts and Records

- 8.1 The Contractor agrees to maintain books, documents, and other records pertaining to all costs and expenses incurred and revenues acquired during this Contract to the extent and in such detail as will properly reflect all costs, direct and indirect, of labor, materials, equipment, supplies and services, and other costs and expenses of whatever nature for which reimbursement is claimed. The Contractor shall be prepared to support charges for salaries and wages by time, attendance and payroll records.
- 8.2 The Iowa Department of Natural Resources, State Auditor, U.S. Department of Energy, and Comptroller General of the United States, or any of their duly appointed representatives, shall have access for the purpose of audit and examination to any book, documents, papers and records of the Contractor which are pertinent at all reasonable times during the period of retention provided for in paragraphs 8.3, 8.4, and 8.5 below and shall have the right to make copies or excerpts or make other transcriptions thereof, subject to the provisions of 199 Iowa Administrative Code Section 1.9 and Iowa Code Chapter 22.
- 8.3 All records in the possession of the Contractor pertaining to this Contract shall be retained by the Contractor for a period of three (3) years beginning with the date upon which the final payment under this Contract is issued. Records for nonexpendable property acquired under this Contract shall be retained for a three (3) year period after the final disposition of the property.
- 8.4 Records relating to any litigation or claim arising out of the performance of this Contract, or costs or expenses of this Contract to which exception has been taken as a result of inspection or audit, shall be retained by the Contractor until such litigation, claim, or exception has been finally settled or until the three (3) year period has expired, whichever occurs later.
- 8.5 The Contractor, in maintaining Contract expenditure accounts and records and reports, shall make any necessary adjustments to reflect refunds, credits, underpayments or overpayments, as well as any adjustments resulting from any administrative reviews and audits by the United States or by the state of Iowa or by the Contractor. Such adjustments shall be set forth in the financial reports filed with the Department.

Section 9.0 Allowable Costs

- 9.1 Allowable costs are specified under the Approved Budget of this Contract. Allowable costs are subject to audit under the principles defined in Office for Management and Budget (OMB) Circulars A-87, A-102, A-110, and A-122.
- 9.2 Indirect costs shall be allowable at a predetermined rate specified in the Approved Budget of this Contract. Indirect cost rates, if applicable, shall be determined according to the principles defined in Office for Management and Budget (OMB) Circulars A-87, A-102, A-110, and A-122.

Section 10.0 Unallowable Costs

The following costs are unallowable under this Contract:

- a. Legal expenses for the prosecution of claims against the Department, the State of Iowa, the Federal Government, or any subdivision thereof;
- b. The difference in costs between first class air accommodations and less than first class air accommodations, unless less than first class air accommodations are not available;
- c. Costs incurred prior to the effective date of the Contract;
- d. Costs of preparing proposals for potential contracts;
- e. Bad debts (any losses arising from uncollectible);
- f. Contingencies (contributions to a contingency reserve or any similar provision for unforeseen events);
- g. Contributions or donations;
- h. Entertainment (cost of amusements, social activities, and incidental costs relating thereto, such as meals, beverages, lodgings, rentals, transportation, and gratuities);
- i. Fines and penalties (costs resulting from violation of, or failure to comply with federal, state and local laws and regulations);
- j. Other financial costs (interest on borrowings -- however represented, bond discounts, costs of financing and refinancing operations, and legal and professional fees paid in connection therewith).

Section 11.0 Termination of Contract

- 11.1 Termination for cause - The Department may terminate this Contract in whole or in part, any at any time before the expiration date, whenever the Department has determined that the Contractor has materially failed to comply with the conditions of the Contract. The Department shall promptly notify the Contractor in writing of the determination and reasons for termination, together with the effective date. Payments made to the Contractor or recoveries by the Department under Contracts terminated for cause shall be in accord with the legal rights and liabilities of the parties.
- 11.2 Termination for convenience - The Department or Contractor may terminate the Contract in whole or in part when both parties agree that the continuation of the Contract would not produce beneficial results commensurate with the future expenditure of funds. The two parties shall agree upon the termination conditions, including the effective date and, in the case of partial terminations, the portion to be terminated. The Contractor shall not incur new obligations for the terminated portion after the effective date and shall cancel as may outstanding obligations as possible. The Contractor shall prepare and deliver to the Department copies of a final report summarizing the work performed and the results obtained to date, together with such information and items which, if the Contract had been completed, would have been required to be furnished to the Department.

Section 12.0 Patents

Title to any and all patentable discoveries and patents therefrom originating as result of any sponsored research set forth in this Agreement shall be vested in the Contractor. The Contractor shall evaluate each such discovery, and if in its judgment the attendant circumstances warrant filing a patent application, it shall do so at its own expense. In cases where the Contractor decides against filing a patent application, the Department shall be notified promptly of the decision together with an offer to pass title to the invention to the state of Iowa. The state of Iowa and any department or divisions thereof, and all political subdivisions within the state shall be entitled to an irrevocable, non-exclusive, royalty-free license for government purposes under any patent held by the Contractor which originates under this Agreement.

Section 13.0 Copyrights and Use of Data

- 13.1 The term "subject data" as used herein includes research data and reports, writings, sound recordings, pictorial reproductions, drawings or other graphical representations, and works of any similar nature which are specified to be delivered under this Contract. The term does not include financial reports, costs analyses, and similar information incidental to Contract administration.
- 13.2 The Contractor shall be considered the author of all original subject data.
- 13.3 Subject to the provisions of Section 13.4 below, the state may duplicate, use, and disclose in any manner for any authorized state activity, and may allow other to do so, all subject data deliverable under this Contract.
- 13.4 In the event the Contractor secures a copyright, the Contractor agrees to and does hereby grant to the state, its officers, agents and employees acting with the scope of their official duties, a royalty-free, non-exclusive, and irrevocable license to publish, translate, reproduce, deliver, perform, dispose of, and to authorize others to do so for use by the state, its division, instrumentalities and local subdivisions, all subject data now or hereafter covered by a copyright. If such subject data is not originated in the performance of this Contract, such license shall be only to the extent that the Contractor, its employees or any individual or concern employed or assigned by the Contractor to originate and prepare such data under this Contract, now has, or prior to completion of final settlement of this Contract may acquire, the right to grant such license without becoming liable to pay compensation to other solely because of such grant.
- 13.5 The Contractor shall exert all reasonable efforts to advise the Department at the time of delivery of the subject data furnished under this Contract of all invasions of the right of privacy contained herein and of all portions of such data copied from work not composed or produced in the performance of this Contract and not licensed under this Section.
- 13.6 The Contractor shall report to the Department promptly an in reasonable written detail, each notice or claim of copyright infringement received by the Contractor

with respect to all subject data delivered under this Contract. On receipt of this information, the parties hereto agree to confer to determine future uses to be made of the subject data.

- 13.7 The Contractor or any or all of its employees or agents may duplicate, use and disclose all subject data deliverable under this Contract, provided that the Contractor or such employees or agents acknowledge the contribution of the Department and the Contract number of this Contract and any copyright secured for such subject data. There shall be no pre-release or publication of data or findings connected with this Contract in scholarly or professional journals or through public presentation or news release or otherwise until the performance of this Contract is completed unless prior written authorization has been obtained from the Department.

Section 14. Notice and Assistance Regarding Patent and Copyright Infringement

- 14.1 The Contractor agrees to report to the Department promptly and in reasonable written detail, each notice or claim of patent or copyright infringements based on the performance of this Contract or which the Contractor has knowledge.
- 14.2 In the event of any claim or suit against the Department, the state of Iowa, their employees, agents, or representatives, or the United States, on account of an alleged patent or copyright infringements arising out of the performance of this Contract or out of the use of any supplies furnished or work or services performed hereunder, the Contractor agrees to furnish the Department, upon request, all evidence and information in the possession of the Contractor pertaining to such suit or claim. Such evidence and information shall be furnished at the expense of the Department except where the Contractor has agreed to indemnify the Department.

Section 15.0 Equipment

- 15.1 Definition - As used herein, the term "equipment" means nonconsumable tangible personal property to be used in the performance of the Contract, having an acquisition cost of Five-Hundred (\$500) Dollars or more, and useful life expectancy of greater than one (1) year.
- 15.2 All property procurements with a unit value of Five-Hundred (\$500) Dollars or more must be approved in advance by the Department. All property procurement by the Contractor shall be according to standards stated in the Office for Management and Budget (OMB) Circular A-102, Attachments N & O. The title of all property purchased with a unit value of Five-Hundred (\$500) Dollars or more remains vested with the Department.
- 15.3 Upon request, the Contractor shall provide the Department with invoice(s) of property purchased. Such purchased property must correspond with approved Contract items.

- 15.4 The Contractor will keep an inventory of the property in their jurisdiction. Inventories must include the following property characteristics: a) the serial number if applicable; b) the Contract Number (if acquisition occurred as part of the Contract); c) its description; d) the date of acquisition; e) invoice number, if purchased; f) the original purchase price; and g) the physical location of the property.
- 15.5 The Contractor shall maintain a control system to insure adequate safeguards to prevent loss, damage or theft to the property. Any loss, damage, or theft of property shall be investigated, fully documented and reported to the Department within sixty (60) calendar days of occurrence.
- 15.6 The Contractor shall implement maintenance procedures to keep all property in good condition. Maintenance costs in excess of one-half (1/2) the estimated current fair market value of property shall require prior Department approval.
- 15.7 Upon termination of this Contract or upon Department need of the property, all property shall be released to the Department. Appropriate disposition instruction will be issued to the Contractor after the Department's review.

Section 16.0 Assignment of Interest

Neither the Contract nor any interest therein nor claim thereunder shall be assigned or transferred by the Contractor to any other party or parties. Attempted assignment may be considered, at the option of the Department, to be a substantial breach and cause for termination within the meanings of Section 11.1 of the General Conditions.

Section 17.0 Personnel

- 17.1 Selection - The Contractor represents that it has, or will secure, all personnel required in performing the work and services under this Contract. Such personnel shall not be employees of or have any contractual relationship with the Department.
- 17.2 Qualification - All of the work and services required hereunder will be performed by the Contractor or under its supervision and all personnel engaged in the work shall be fully qualified and shall be authorized under state and local law to perform such services.
- 17.3 Change of Key Personnel – Any individual specified by name under the article Key personnel within the Special Conditions herein is considered essential to the work and services to be performed. If for any reason substitution for a specified individual becomes necessary, the Contractor shall provide immediate written notification of such to the Department. The Contractor shall provide the name and resume of qualifications for the replacement individual. Any replacement shall be subject to the approval of the Department.

Section 18.0 Effect of Invalidity

If any of the provisions herein shall be in conflict with the laws of the state of Iowa, or shall be declared to be invalid by any court of record in this state, such invalidity shall be construed to affect only such portions as are declared invalid or in conflict with the law and such remaining portions of the Contract shall remain in effect and shall be construed as if such invalid or conflicting portions were not contained here.

Section 19.0 Litigation

- 19.1 The Contractor agrees to pay the cost of any litigation arising from failure of the Contractor to comply with the conditions or terms of this Contract or resulting from the negligence or incompetence of the Contractor. In carrying out the provisions of the Contract or in exercising any power or authority otherwise, it is understood that in such matters the Department acts for the state.
- 19.2 The venue for any cause of action based upon this Contract by either party to this Contract, shall be in Polk County, Iowa, and the law of the state of Iowa shall apply.

Section 20.0 Assurance

- 20.1 The Contractor hereby assures and certifies to comply with the regulations, policies, guidelines, and requirements of the Office for Management and Budget (OMB) Circulars No. A-102, A-87, and A-110, and 47 CFR, No. 129, as they relate to the use of federal funds for this project.
- 20.2 The Contractor shall not discriminate against any employee or applicant for employment because of race, creed, color, religion, national origin, sex, age, political belief, or handicap, in its employment practices. Such employment practices may include, but are not limited to, recruitment, recruitment advertising, hiring, layoff or termination, promotion, demotion, transfer, rates of pay, training and participation in upward mobility programs, or other forms of compensation and use of facilities.
- 20.3 The Contractor will send to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding a notice advising the labor union or representative of the Contractor's commitments under this nondiscrimination clause and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- 20.4 The Contractor will comply with all relevant provisions of the Iowa Civil Rights Act, Iowa Executive Order #15 of 1973, Title VI of the Civil Rights Act of 1964 (P.L. 88-352), Section 16 of the Federal Energy Administrative Act of 1974 (P.L. 93-275), Section 401 of The Energy Reorganization Act of 1974 (P.L. 93-438), Title IX of the Educational Amendments of 1972, as amended (P.L. 92-318), P.L. 93-568, and P.L. 94-482), Section 504 of the Rehabilitation Act of 1973 (P.L. 93-112), the Age Discrimination Act of 1975, (P.L. 94-135), Title VIII of the Civil Rights Act of 1968 (P.L. 90-284), the Department of Energy Organization Act of

1977 (P.L. 95-91), and the Energy Conservation and Production Act of 1976, as amended (P.L. 94-385). The Contractor shall furnish all information and reports requested by the Department and will permit access to its payroll and employment records by the Department or the Department's grantor agency for purposes of investigation to ascertain compliance with this nondiscrimination clause.

- 20.5 In the event of the Contractor's noncompliance with the nondiscrimination clauses of this Contract, this Contract may be canceled, terminated or suspended in whole or in part and the Contractor may be declared ineligible for further contracts with the Department. In addition, the Department may take such further action, and such other sanctions may be imposed and remedies invoked, as provided by the Iowa Civil Rights Act, Chapter 601 A, Code of Iowa 1977, as heretofore and hereinafter amended, or as otherwise provided by law.
- 20.6 The Contractor will include the provisions of subsections 20.1 through 20.5 hereof, in every subcontract unless specifically exempted by approval of the Department, so that such provisions will be binding on each subcontractor and vendor. The Contractor will take such action with respect to any subcontractor as the state may direct as a means of enforcing such provisions including sanction for noncompliance; provided, however, that in the event the Contractor becomes involved in, or is threatened with, litigation with the subcontractor or vendor as a result of such direction by the state, the Contractor may request the state of Iowa to enter into such litigation to protect the interests of the state of Iowa.

Section 21.0 Contingent Fees

The Contractor warrants that it has not employed or retained any company or person, other than a bona fide employee working solely for the Contractor, to solicit or secure this Contract, and that it has not paid or agreed to pay any company or person, other than a bona fide employee working solely for the Contractor, any fee, gift, or any other consideration, contingent upon or resulting from the award or making of this Contract. For breach or violation of this warranty, the Department shall have the right to annul this Contract without liability or, otherwise recover, the full amount of such fee, commission, percentage, brokerage fee, gift, or contingent fee.

Section 22.0 Officers Not to Benefit

No officer or employee of the state shall participate in any decision relating to this Contract which affects his or her personal interest or the interest of any corporation, partnership, or association in which he or she is directly or indirectly interested; or have any interest, direct or indirect, in this Contract or the proceeds thereof.

Section 23.0 Audit Requirement

At the request of the Department the Contractor shall submit a copy of its regularly conducted annual audit(s), pursuant to OMB Circular A-128 or OMB A-110 (whichever is applicable to the Contractor), to the Department for the time period(s) encompassed by

this Contract. If this audit is not performed or available, subsequent arrangements are to be made with the Department.

Section 24.0 Availability of Funds

If funds anticipated for the continued fulfillment of this agreement are at any time not forthcoming or insufficient, either through the failure of the Federal Government or of the State of Iowa to appropriate funds, or discontinuance or material alteration of the program under which funds were provided, then the Department shall have the right to terminate this agreement without penalty in accordance with Section 11.1 of the General Conditions by giving not less than thirty (30) days written notice documenting the lack of funding.